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First Named Inventor	Yukio Michishita
Art Unit	2613
Examiner Name	A. Bello
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Firm Name	McGinn Intellectual Property Law Group, PLLC 8321 Old Courthouse Road, Suite 200, Vienna, VA 22182-3817		
Signature	Frederick Coop[...]		
Printed name	Frederick E. Cooperrider, Esq.		
Date	March 8, 2007	Reg. No.	36,769

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of

Yukio MICHISHITA

Serial No.: **09/933,705** | Group Art Unit: 2613

Filed: August 22, 2001 | Examiner: Bello, A.

For: **OPTICAL TRANSMISSION PATH MONITORING SYSTEM, MONITORING APPARATUS THEREFOR AND MONITORING METHOD THEREFOR**

Commissioner of Patents
Alexandria, VA 22313-1450

APPELLANT'S SECOND REPLY BRIEF ON APPEAL

Sir:

Appellant has appealed the rejection of claims 1, 3-11, 23, and 25-39 in the Office Action dated January 12, 2006, and timely submitted an Appeal Brief on June 12, 2006, as revised and re-submitted by facsimile on October 13, 2006, to accommodate the Notification of Non-Compliant Appeal Brief mailed on September 27, 2006.

The Examiner's Answer was mailed on August 25, 2006.

A Reply Brief was submitted on October 23, 2006. A second Examiner's Answer was mailed on January 10, 2007, wherein the Examiner withdrew the rejection under 35 U.S.C. § 103(a).

This Reply Brief responds to the second Examiner's Answer, including an update of the status of claims and listing of claims in the Appendix, as well as additional arguments concerning the remaining rejection.

As best understood by the withdrawal of the obviousness rejection for claims 4, 5, 7-11, 26-31, 33-35, and 37-39, the Examiner now considers that only claims 1, 3, 6, 23, 25, 32, and 36 remain rejected under 35 USC §102(e).

A. STATUS OF CLAIMS (section revised to reflect withdrawal of obviousness rejection)

Claims 1, 3-11, 23, and 25-39 are all of the claims presently pending in the application. In the second Examiner's Answer mailed on January 10, 2007, the Examiner has formally withdrawn the rejection for claims 4, 5, 7-11, 26-31, 33-35, and 37-39.

Claims 1, 3, 6, 23, 25, 32, and 36 stand rejected under 35 USC §102(e) as anticipated by commonly-assigned US Patent 6,301,404 to Yoneyama. Claims 4, 5, 7-11, 26-31, 33-35, and 37-39 are understood as now being allowable, pending decision by the Board on the anticipation rejection.

B. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL (as revised to reflect the withdrawal of Ground #2)

Appellant presents the following ground for review by the Board of Patent Appeals and Interferences:

GROUND 1: <u>THE ANTICIPATION REJECTION</u>

Whether the rejection under 35 U.S.C. § 102(e) can be maintained for claims 1, 3, 6, 23, 25, 32, and 36, when the rejection clearly fails to address the plain meaning of the claim language as would be agreeable to one having ordinary skill in the art and fails to provide any demonstration of support for inherency.

C. ARGUMENTS (As augmenting the arguments in the Reply Brief submitted on October 23, 2007)

GROUND #1: The Anticipation Rejection based on Yoneyama

Primary Reference Yoneyama Teaches a Monitoring System for Two Different Directions But NOT for Distinguishing Failures as Due to Transmission Line vs. Optical Amplifiers

First, it is noted, in summary, that the present invention discloses a system constitution that makes it possible to separately monitor both an optical transmission path (optical fiber transmission line) and optical amplifier-repeaters (optical amplifiers) at the same time, thereby being able to distinguish whether a fault is due to a fiber fault or to an amplifier-repeater fault. It achieves this by using one probe light for the fibers and another probe light for the optical amplifiers, in combination with the effect due to dispersion.

In contrast, as described in the abstract, Yoneyama discloses a monitoring system wherein supervisory signal lights are used for monitoring in two different directions, which is an entirely different concept. Yoneyama does not disclose a system constitution that makes it possible to separately monitor each of an optical fiber transmission line and the optical amplifiers of that path at the same time. That is, in Yoneyama, there is a clear difference between the constitution and concepts of monitoring uplinks and downlinks, as shown in figures 9, 10, 13, and 14.

Nowhere does Yoneyama suggest monitoring separately the transmission line versus the optical amplifiers. The Examiner points to no location in Yoneyama for such suggestion.

The Second Examiner's Answer Still Fails to Provide a *prima facie* Anticipation Rejection

Second, Appellant respectfully submits that the Examiners Answer contains a rejection in paragraph 2 beginning on page 3 of the Answer that clearly fails to meet the initial burden of a *prima facie* rejection. Moreover, the Examiner's arguments in section (10), beginning on page 5 of the Answer, attempt to use rhetoric and speculation to improperly convert this rejection into an inherency argument of some sort, but fails to provide proper support for such inherency position and fails to overcome the basic deficiency of the primary reference Yoneyama described above and the basic deficiency of the rejection of record.

Relative to the rejection itself, as described beginning at paragraph 2 beginning on page 3, the Examiner points to lines 13 to 20 and 35 to 40 of column 11.

Lines 13-20 of column 11 state:

"*Therefore, the transmission line supervising circuit 47a can observe whether the state of the optical amplifying repeaters 34a, 34b and optical fiber transmission lines 41a, 41b is normal or not, based on the information of intensity amplitude, frequency and time difference between the supervisory signal light transmitted in the supervisory signal light received.*"

Lines 35-40 of column 11 state:

"*As clearly understood from FIGS. 11a to 11c, by using two supervisory signal lights with different wavelengths, λ_{sv1}, λ_{sv2}, both of the up and down optical fiber transmission lines 41a, 41b can be monitored simultaneously at one optical in office system.*"

Appellant submits that these lines in Yoneyama clearly fail to teach or suggest using a first monitor probe light for monitoring optical fibers and a second monitor probe light for monitoring optical amplifier-repeaters, as required by the independent claims.

Relative to the Examiner's Arguments in section (10) beginning on page 5, Appellant respectfully traverses the Examiner's allegation in the first paragraph that the argument that follows therein is not an inherency argument. Appellant submits that the Examiner is alleging inherency, even if the Examiner prefers to characterize the rejection (actually, the argument that follows, since the formal rejection itself clearly fails to satisfy the plain meaning of the claim language of the independent claims, as pointed out above) as providing "*...factual evidence in the disclosure in Yoneyama which, when considered in light of Appellant's specification and the cause-effect nature of the claim language, meets the limitations of the claimed invention.*"

Appellant respectfully traverses the above-recited Examiner's position that factual evidence in Appellant's disclosure in any way supports the Examiner's position.
In order to focus on the primary deficiencies of the Examiner's position, Appellant brings to the Board's attention the following fundamental errors, as follows.

1. First, contrary to the Examiner's characterization in the first paragraph on page 6, there is no suggestion in the Appellant's disclosure that one can arbitrarily select a frequency in an optical system to be a center frequency and then summarily declare that any frequency higher than the center frequency causes a positive dispersion and any frequency lower than the center frequency causes a negative dispersion. Nor does the Examiner provide any support for this characterization indicating an inherent relationship

of positive/negative dispersion for any arbitrary frequency. In fact, this simplistic model of dispersion is simply not correct.

Rather, as clearly described beginning in the exemplary embodiment of the fiber network described in the paragraph starting at line 24 on page 11, the present invention involves an optical network that specifically includes non-zero dispersion shift fibers and 1.3 μm zero dispersion fibers in a proportion that provides, as explained at lines 18-20 of page 12, an optical transmission path having the characteristic of exactly zero dispersion at 1550 nm, as shown in Figure 3 and 4.

2. Second, there is no suggestion in the Appellant's disclosure that all optical transmission paths will have a zero dispersion frequency, let alone a zero dispersion frequency at any arbitrary and non-specified frequency. Yoneyama does not identify any specific frequencies. The Examiner seems to imply that not only does any optical fiber transmission path inherently have a zero dispersion frequency, but that any frequency can be arbitrarily assigned as being a zero dispersion frequency.

However, the Examiner fails to provide any support for this allegation and the Appellant's disclosure does not in any way support this characterization. Again, this assumption is simply not correct.

3. Stated slightly differently, it is Appellant who has recognized that a transmission path can be specifically designed by using an appropriate ratio of fiber compositions, to provide a transmission path having the zero dispersion characteristic exemplarily demonstrated in Figures 3 and 4. It is the Appellant who has recognized that the positive dispersion region can be used to monitor optical amplifier-repeaters and the negative

region can be used to monitor optical fibers, as shown clearly in Figure 5 and the method steps shown in Figure 6 (e.g., see step S8) and Figure 10 (e.g., see step S18).

4. Thus, contrary to the Examiner's allegation, the claimed invention describes a combination of elements, which elements are simply not present or suggested in Yoneyama, particularly in view that this reference does not even mention dispersion and does not even suggest the possibility of being able to detect failures as specifically due to either a failed fiber component or a failed amplifier-repeater component. As clearly described in the Abstract, Yoneyama is directed to the entirely different concept of different-direction monitoring.

There is no suggestion in Yoneyama to be able to distinguish a failure as caused by a fiber failure or by an amplifier-repeater, let alone by using the concept of dispersion.

5. Nor does the claimed invention merely claim a cause-effect relationship inherent in any and all optical transmission paths.

6. In order to meet the initial burden of the present invention, using Yoneyama as the primary reference, the Examiner would have to demonstrate:

a) A transmission path in Yoneyama designed with an identified zero dispersion frequency and with positive and negative regions;

b) Recognition in Yoneyama that a failure of an optical fiber can be discerned from a failure of an amplifier-repeater, as based on dispersion; and

c) A method, such as demonstrated in the present disclosure, to allow such component failures to be identified, wherein one probe light is used to monitor the optical fibers and another probe light is used to monitor amplifier-repeaters.

7. Yoneyama fails to provide any suggestion that faults can be distinguished as due to fiber faults or as due to amplifier-repeater faults, let alone suggesting a mechanism based on dispersion or to use one probe light for fibers and another probe light for amplifier-repeaters.

8. Therefore, Appellant submits that the rejection currently of record fails to meet the initial burden of a *prima facie* rejection.

D. CONCLUSION

In view of the foregoing, Appellants submit that claims 1, 3-11, 23, and 25-39, all the claims presently pending in the application, are clearly patentably distinct from the prior art of record and in condition for allowance. Thus, the Board is respectfully requested to remove all remaining rejections of claims 1, 3-11, 23, and 25-39, and specifically, the anticipation rejection for claims 1, 3, 6, 23, 25, 32, and 36.

Please charge any deficiencies and/or credit any overpayments necessary to enter this paper to Attorney's Deposit Account number 50-0481.

Respectfully submitted,

Dated: 3/9/07

Frederick E. Cooperrider
Reg. No. 36,769

McGinn Intellectual Property Law Group, PLLC
8231 Old Courthouse Road, Suite 200
Vienna, VA 22182-3817
(703) 761-4100
Customer Number: 21254

Docket 251768/00 (NEC.208)

CLAIMS APPENDIX
(Revised, due to the Examiner's Answer mailed on January 10, 2007)

1. (Rejected) An optical transmission path monitoring system for monitoring optical transmission paths by wavelength-division multiplexing probe lights with signal lights of a wavelength division multiplexing optical transmission system, said optical transmission path monitoring system comprising:

an optical fiber monitoring probe light for monitoring optical fibers which constitute some parts of said optical transmission paths; and

an optical amplifier-repeater monitoring probe light for monitoring optical amplifier-repeaters which constitute other parts of said optical transmission paths,

wherein a wavelength of said optical fiber monitoring probe light comprises such a wavelength as makes wavelength dispersion in said optical transmission paths negative, and a wavelength of said optical amplifier-repeater monitoring probe light comprises such a wavelength as makes wavelength dispersion in said optical transmission paths positive.

2. (Canceled)

3. (Rejected) The optical transmission path monitoring system, as claimed in Claim 1, wherein:

said optical transmission paths have a zero dispersion wavelength which makes a wavelength dispersion of group delays over a full length of said optical transmission paths zero;

a wavelength of said optical fiber monitoring probe light is on a shorter wavelength side than said zero dispersion wavelength; and

a wavelength of said optical amplifier-repeater monitoring probe light is on a longer wavelength side than said zero dispersion wavelength.

4. (Allowable) The optical transmission path monitoring system, as claimed in Claim 1, wherein:

said wavelength division multiplexing optical transmission system comprises two-core two-way optical transmission paths, and comprises a total of four probe lights including said optical fiber monitoring probe light and said optical amplifier-repeater monitoring probe light for delivering to each of two outward optical transmission paths which said two-core two-way optical transmission paths have; and

every one of said four probe lights has a different wavelength from the others.

5. (Allowable) The optical transmission path monitoring system, as claimed in Claim 4, further comprising:

probe light generating means for generating said optical fiber monitoring probe lights and optical amplifier-repeater monitoring probe lights;

multiplexing means for multiplexing said probe lights with signal lights and delivering multiplexed lights to an outward optical transmission path;

loop back means for branching reflected light components generating from said probe lights from said outward optical transmission path and coupling the branched lights

with signal lights on an inward optical transmission path; and

optical detecting means for detecting said light components transmitted by said loop back means and outputted from said inward optical transmission path, wherein:

said optical transmission paths are monitored on a basis of an output of said optical detecting means.

6. (Rejected) The optical transmission path monitoring system, as claimed in Claim 5, wherein:

said optical detecting means optically detects by a coherent light detecting system said light components transmitted by said loop back means and outputted from said inward optical transmission path.

7. (Allowable) The optical transmission path monitoring system, as claimed in Claim 6, wherein:

said coherent light detecting system comprises an optical homodyne detection system using said optical fiber monitoring probe light from said inward optical transmission path as a received light and a light partially branched from said optical fiber monitoring probe light from said probe light generating means as a local oscillating light.

8. (Allowable) The optical transmission path monitoring system, as claimed in Claim 5, wherein:

said optical detecting means optically detects by a direct light detecting system

said light components transmitted by said loop back means and outputted from said inward optical transmission path.

9. (Allowable) The optical transmission path monitoring system, as claimed in Claim 5, wherein:

said loop back means comprises two 2×2 optical couplers inserted into said optical transmission paths and mutually connected by one each of optical terminals.

10. (Allowable) The optical transmission path monitoring system, as claimed in Claim 9, wherein:

said 2×2 optical couplers comprise light reflecting means for selectively reflecting said optical amplifier-repeater monitoring probe lights.

11. (Allowable) The optical transmission path monitoring system, as claimed in Claim 5, further comprising:

means for alternatively selecting said optical fiber monitoring probe lights and optical amplifier-repeater monitoring probe lights for supply to said outward optical transmission path, and monitoring the optical fibers and the optical amplifier-repeaters on a time-division basis.

12-22. (Canceled)

23. (Rejected) An optical transmission path monitoring method for monitoring optical transmission paths by wavelength-division multiplexing probe lights with signal lights of a wavelength division multiplexing optical transmission system, said method comprising:

using an optical fiber monitoring probe light for monitoring optical fibers which constitute some parts of said optical transmission paths; and

using an optical amplifier-repeater monitoring probe light for monitoring optical amplifier-repeaters which constitute other parts of said optical transmission paths,

wherein a wavelength of said optical fiber monitoring probe light comprises such a wavelength as makes wavelength dispersion in said optical transmission paths negative, and a wavelength of said optical amplifier-repeater monitoring probe light comprises such a wavelength as makes wavelength dispersion in said optical transmission paths positive.

24. (Canceled)

25. (Rejected) The optical transmission path monitoring method, as claimed in Claim 23, wherein:

said optical transmission path has a zero dispersion wavelength which makes a wavelength dispersion of group delays over a full length of said optical transmission paths zero;

a wavelength of said optical fiber monitoring probe light is on a shorter wavelength side than said zero dispersion wavelength; and

a wavelength of said optical amplifier-repeater monitoring probe light is on a

longer wavelength side than said zero dispersion wavelength.

26. (Allowable) The optical transmission path monitoring method, as claimed in Claim 23, wherein:

said wavelength division multiplexing optical transmission system comprises two-core two-way optical transmission paths, and comprises a total of four probe lights including said optical fiber monitoring probe light and said optical amplifier-repeater monitoring probe light for delivering to each of two outward optical transmission paths which said two-core two-way optical transmission paths include; and

every one of said four probe lights has a different wavelength from the others.

27. (Allowable) The optical transmission path monitoring method, as claimed in Claim 26, said method comprising:

generating said optical fiber monitoring probe lights and optical amplifier-repeater monitoring probe lights;

multiplexing said probe lights with signal lights and delivering multiplexed lights to said outward optical transmission path; and

detecting said light components outputted from said inward optical transmission path by branching reflected light components generating from said probe lights from an outward optical transmission path and looping back branched lights onto an inward optical transmission path,

whereby said optical transmission paths are monitored on a basis of an output of

said optical detecting means.

28. (Allowable) The optical transmission path monitoring method, as claimed in Claim 27, whereby:

light components outputted from said inward optical transmission path are detected by a coherent light detecting system during said detecting light components.

29. (Allowable) The optical transmission path monitoring method, as claimed in Claim 28, whereby:

said coherent light detecting system comprises an optical homodyne detection system using said optical fiber monitoring probe light from said inward optical transmission path as a received light and a light partially branched from said optical fiber monitoring probe light generated from said probe light as a local oscillating light.

30. (Allowable) The optical transmission path monitoring method, as claimed in Claim 27, whereby:

said light components transmitted by said looping back and outputted from said inward optical transmission path are detected by a direct light detecting system during said detecting light components.

31. (Allowable) The optical transmission path monitoring method, as claimed in Claim 27, whereby:

said optical fiber monitoring probe lights and optical amplifier-repeater monitoring probe lights are alternatively selected for supply to said outward optical transmission path, and the optical fibers and the optical amplifier-repeaters are monitored on a time-division basis.

32. (Rejected) An optical monitoring apparatus for monitoring an optical transmission path, comprising:

a first probe light generating unit for emitting a first optical fiber monitoring probe light which monitors optical fibers constituting said optical transmissions path; and

a second probe light generating unit for emitting a first optical amplifier-repeater monitoring probe light which monitors optical amplifier repeaters constituting said optical transmission path,

wherein a wavelength of said first optical fiber monitoring probe light is such a wavelength as makes wavelength dispersion in said optical transmission paths negative, and a wavelength of said first optical amplifier-repeater monitoring probe light is such a wavelength as makes wavelength dispersion in said optical transmission paths positive.

33. (Allowable) The optical monitoring apparatus as claimed in claim 32, further comprising:

a first probe light detecting unit for detecting a second optical fiber monitoring probe light which monitors said optical fibers; and

a second probe light detecting unit for detecting a second optical amplifier-repeater

monitoring probe light which monitors said optical amplifier repeaters,

wherein a wavelength of said second optical fiber monitoring probe light is such a wavelength as makes wavelength dispersion in said optical transmission paths negative, and a wavelength of said second optical amplifier-repeater monitoring probe light is such a wavelength as makes wavelength dispersion in said optical transmission paths positive.

34. (Allowable) The optical monitoring apparatus as claimed in claim 33, wherein:

the wavelength of said first optical fiber monitoring probe light differs from the wavelength of said second optical fiber monitoring probe light; and

the wavelength of said first optical amplifier-repeater monitoring probe light differs from the wavelength of said second optical amplifier-repeater monitoring probe light.

35. (Allowable) The optical monitoring apparatus as claimed in claim 33, further comprising:

an optical coupling unit for coupling said first optical fiber monitoring probe light and first optical amplifier-repeater monitoring probe light; and

an optical switching unit for changing connections with said optical transmission path to said first probe light detecting unit or said second probe light detecting unit.

36. (Rejected) The optical monitoring apparatus as claimed in claim 32, wherein:

the wavelengths of said first optical fiber monitoring probe light is on a shorter wavelength side than a zero dispersion wavelength which makes a wavelength dispersion

in said optical transmission path zero; and

the wavelength of said first optical amplifier-repeater monitoring probe light is on a longer wavelength side than said zero dispersion wavelength.

37. (Allowable) The optical monitoring apparatus as claimed in claim 33, wherein:

the wavelength of said second optical fiber monitoring probe light is on a shorter wavelength side than a zero dispersion wavelength which makes a wavelength dispersion in said optical transmission path zero; and

the wavelengths of said second optical amplifier-repeater monitoring probe light is on a longer wavelength side than said zero dispersion wavelength.

38. (Allowable) The optical monitoring apparatus as claimed in claim 33, wherein:

said first probe light detecting unit optically detects by an optical homodyne detecting system.

39. (Allowable) The optical monitoring apparatus as claimed in claim 33, wherein:

said second probe light detecting unit optically detects by a direct light detecting system.

EVIDENCE APPENDIX

(NONE)

RELATED PROCEEDINGS APPENDIX

(NONE)